

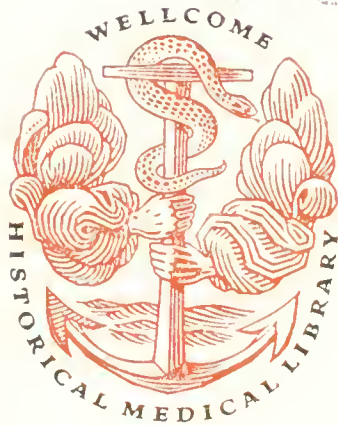
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RUDIMENTS

R. i. 16

OF THE

ANATOMY AND PHYSIOLOGY

OF THE

HUMAN BODY;

CONSISTING OF TABLES, &c.

COMPILED

FOR STUDENTS OF THOSE SCIENCES,

BEGINNING THEIR RESEARCHES.

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SURGEON TO THE EASTERN DISPENSARY, &c. &c. LATE DE-
MONSTRATOR OF ANATOMY AT THE LONDON HOSPITAL.

“Credunt enim homines, rationem suam verbis imperare; Sed fit etiam
ut verba vim suam super intellectum retorqueant et reflectant; quod philoso-
phiam et scientias reddidit sophisticas et inactivas.”—*Bacon. Nov. Org. Lib. i.
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THE ROYAL COLLEGE OF SURGEONS;

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THE

DUKE OF GLOUCESTER,

AND

TO THE LONDON HOSPITAL;

THESE RUDIMENTS

ARE RESPECTFULLY INSCRIBED,


AS A TESTIMONIAL OF ESTEEM AND REGARD,

BY HIS OBLIGED FRIEND,

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INTRODUCTION.

NATURAL Historians have arranged the numerous and various Bodies, subjects of their enquiries, into Classes, Orders, Genera, and Species. The following classification is primary and fundamental:

BODIES ..	{ Organic	{ Animate	{ Human.
		{ Inanimate (<i>deprived of life.</i>)	{ Animal. Vegetable.
	{ Inorganic, Inanimate (<i>denied life</i>)	Minerals, Water, Air, &c. &c.	

Anatomy explains the Formation and Structure of organic bodies: Physiology treats of

the Faculties, Functions, and Phenomena of these bodies, and the uses of their Organs.

Living and dead bodies are subjects of Anatomy.

Living bodies are subjects of Physiology.

Anatomists, by means of dissection and auxiliary processes, discover and demonstrate formation and structure.

Physiologists, by means of observation and experiment, ascertain phenomena; and by induction, attain knowledge of those laws which regulate their connexion and succession.

The phenomena of living bodies, are results of their Functions.

Functions imply Faculties.—

To consider the method of studying these interesting and important Sciences, forms

no part of the present plan; but I cannot resist cautioning my young friends against the danger of Hypotheses. Some have contended “that the formation of a hypothetical system, is a stronger proof of inventive genius, than the patient investigation of Nature, in the way of induction. To form a system, appears to the young and inexperienced understanding, a species of creation; to ascend slowly to general conclusions, from the observation and comparison of particular facts, is to comment servilely on the works of another.

“No opinion, surely, can be more groundless. To fix on a few principles, or even on a single principle, as the foundation of a theory; and by an artful statement of supposed facts, aided by a dexterous use of language, to give a plausible explanation, by means of it, of an immense number of phenomena; is within the reach of most men, whose talents have been a little exercised among the subtilties of the Schools: whereas, to follow Nature through all her varieties with a quick, yet an exact eye:—to re-

cord faithfully what she exhibits, and to record nothing more :—to trace, amidst the diversity of her operations, the simple and comprehensive laws by which they are regulated, and sometimes to guess at the beneficent purposes to which they are subservient; may be safely pronounced to be the highest effort of a created intelligence.”

DIVISION OF THE BODY.

THE Student will find it useful to begin with the division of the Body. The division which is here adopted, is primary, fundamental, and of general application.

TABLE I.

BODY.	HEAD . . .	{	<i>Skull.</i> <i>Face</i>	{	Superior Maxilla. Inferior Maxilla.		
	NECK.						
	TRUNK . . .	{	<i>Thorax.</i> <i>Abdomen.</i> <i>Pelvis.</i>				
EXTREMITIES	{	{	<i>Upper</i>	{	Shoulder. Arm. Fore-Arm. Hand	{	Carpus. Metacarpus. Fingers. Thumb.
EXTREMITIES	{	{	<i>Lower</i>	{	Thigh. Leg. Foot	{	Tarsus. Metatarsus. Toes.

COMPOSITION OF THE BODY.

After having learned the division of the Body, its composition naturally engages the attention of the Student. He ought to distinguish that kind of composition which he learns of anatomists, from that which he is taught by chemists.

The Body is composed of Solids and Fluids.

BODY.	{	Solids	{	Organic	{	Textures.
				Organs.		
						Apparatus.
					{	Inorganic
	{	Fluids				Chyle, Lymph, Blood, Gastric juice, Bile, &c. &c.

Textures.—Those parts of the body which are usually called dissimilar parts; *e. g.* Membrane, Cellular Substance, Artery, &c. &c.

Organs.—Assemblages of several different textures, connected with each other; *e. g.* The Liver, Kidneys, &c. &c.

Apparatus.—Several organs mutually related; *e. g.* those of circulation, respiration, &c. &c.

The Inorganic Solids and the Fluids of the Body are omitted in these Rudiments, being subjects of Chemistry, and of that part of Physiology which considers the Functions in particular.

CHARACTERS OF TEXTURES.

The next step of the Student appears to be that of learning to distinguish the several Textures from each other. This knowledge obtained from practical Anatomy, is applicable to Surgery.

The Textures, viz. Membrane, Cellular Substance, Artery, Vein, Absorbent, Excretory Duct, Nerve, Muscle, Tendon, Ligament, Cartilage, Bone, are characterized as follows:

Membrane.—The internal surfaces of the parietes of cavities, and the surfaces of viscera opposed to and contiguous with them and each other, are formed by Membrane, which is an extended layer of animal matter connected with surrounding parts; *e. g.* the Dura Mater of the Scull—the Pleura of the Lungs and Thorax—the Peritoneum of the Abdomen and Viscera—the external and internal coats of the Urinary Bladder—the surface of the Nostrils—the internal coat of arteries, veins, &c. Membranes have in general, when detached, a cellular connecting surface, and a surface moistened by a fluid.

Cellular Substance.—This texture is the connecting medium, and, in the opinion of some anatomists, the basis of the organic solids. It is composed of small portions of Membrane so arranged and united with each other, as to form cells. It exists between Membranes

and surrounding parts; between Muscles; between the textures and coats of the various organs, &c. &c.

Vessels.—There are four systems of Vessels, viz. Arteries, Veins, Absorbents, and Excretory Ducts, concerned in the circulation and distribution of the fluids.

Arteries convey blood from the heart; Veins convey blood to the heart, an organ having four cavities, two on each side, which communicate with each other, viz. an auricle and a ventricle. A septum prevents immediate communication between the auricles, and also between the ventricles. The blood, therefore, cannot pass directly from the one to the other, but circuitously through the lungs. —Two arteries originate from the Heart, viz. the Pulmonary Artery, from the right ventricle, to be distributed only to the Lungs. The Aorta, from the left ventricle, to be distributed to every organ of the body. From these primary trunks all the branches (which are continuous canals) proceed. Two veins (the *venæ cavæ*) terminate in the right auricle of the heart. Four veins (the pulmonary veins) terminate in the left auricle of the heart.

Circulation of the Blood.—This fluid, coming from every organ of the body, enters the right auricle of the heart; it is thence propelled into the right ventricle: from the right ventricle it passes into the pulmonary artery, through which, and through the pulmonary

veins, it enters the left auricle of the heart; it is thence propelled into the left ventricle: from the left ventricle it passes into the aorta, to be conveyed to every organ of the body. —Thus is the double circle compleated. The apparatus is double. If breathing cease, the circulation is soon suspended, nor can it be restored till this function of the lungs is either renewed, or carried on by artificial means.

Artery.—By an Artery is to be understood, a portion of the Arterial System, to which a particular name is allotted; *e. g.* the Aorta—the Carotid Artery, the Femoral Artery, &c. &c. The sides of Arteries may be separated into layers, called Coats. The external coat of an artery is connected with the surrounding parts by cellular substance. The internal coat is membrane. Between these, and connected with them, there are (according to some anatomists) muscular fibres. The membranous surface of an Artery is smooth, and without valves, excepting at the commencement of the Aorta and pulmonary Artery. Arteries do not collapse when empty; if divided by transverse section, they shew an opening of a circular form. If compressed, when emptied, their sides may be brought into contact; but the pressure being discontinued, they recover their patency: this results from elasticity. Blood is propelled from and by the Heart, through

the Arteries, in a continuous stream, with occasional jets, (denoted by the Pulse) manifested if an Artery be wounded. Arteries terminate on the surfaces of cavities with open extremities—and are continued into other vessels.

Vein.—By a Vein is to be understood a portion of the Venal System, to which a particular name is allotted: *e. g.* the Cava—the Jugular Vein—the Femoral Vein, &c. &c. The sides of Veins are composed of Coats, thinner and more dense than those of the Arteries which they accompany. The membranous surface of a Vein is smooth, but at certain places there are Valves. Veins have not muscular fibres? They collapse when empty. Blood is propelled through the Veins in a continuous stream, without jets. Veins originate from Arteries, and terminate in the Heart.

Absorbent.—Absorbent vessels, both Lymphatics and Lacteals, originate on surfaces with open extremities. They terminate in Veins. The coats of these vessels are thin, dense, and pellucid. Their valves are extremely numerous. They are much smaller than the Arteries and Veins which they accompany. They pass into and from bodies called the Glands of this System. Muscular fibres, though not visible, are generally allowed to exist.

Excretory Duct.—Excretory Ducts convey fluids from Glands. They originate with open ex-

tremities, which communicate with those of the Arteries of the Gland, either immediately or mediately, by cells. They terminate in those organs which receive the fluids, with open extremities; *e. g.* the Ureters, the Biliary Duct, &c. &c.

Gland.—Glands; *e. g.* the Liver—the Kidneys—the Testicles, &c. &c.

Nerve.—Nerves are cords composed of fibres loosely connected with each other, and easily separable. If transversely divided, they are seen to consist of membranous and of white medullary substances. They are connected with surrounding parts by cellular substance. They are traceable to original pairs, connected with the Brain and Spinal Medulla; and to Muscles and Organs of Sense, &c. If divided in the living body, Sensation, Perception, Muscular Motion, &c. are suspended.

Muscle.—Muscles are fibrous and red; but their formation and structure present great variety even in the human body: they manifest little elasticity, and after death are easily torn. They are distinguishable in the living body from every other organ by contraction. They are connected with Tendon.

Tendon.—Tendons are fibrous substances, inelastic, connected with muscles, and, in general, with the moveable parts of the body. The student should contrast the colour of Nerves with that of Tendons—also the fibrous texture of the former with that of the latter;

by which means he will accurately distinguish them from each other, both in the dead and in the living body.

Aponeurosis and Fascia are modifications of Tendon.

Ligament.—Ligaments are fibrous; they connect bones with each other. This circumstance, and their colour, distinguish them from Tendons. They are inelastic.

Capsular Ligament.—*Vide Joint.*

Cartilage.—Cartilages cover, and are closely connected with the ends of bones which form joints. They are extremely elastic. They are found in other parts of the body; *e. g.* the external Ear, the Nose, the Trachea, &c.

Inter-articular Cartilage.—*Vide Joint.*

Bone.—Bones, the most solid parts of the Body: when connected, they are called, collectively, the Skeleton.

They contain Medulla, an animal oil.

CHARACTERS OF FUNCTIONS.

INTELLECTION : Comprehends :

Sensation.—"An act of mind," excited by impressions on Organs supplied with nerves, accompanied with consciousness, and distinguishable "from all others by this, that it hath no object distinct from the act itself."

Perception.—An act of mind, suggesting some notion of objects, attended with belief of their present existence.

Smelling.—Effluvia, dispersed in atmospheric air, drawn during inspiration through the nostrils, impress the nose, nerves, and brain, influence mind, and excite Smell.

Tasting.—Particles of bodies soluble in saliva, impress the tongue, &c. &c.
And excite Taste.

Hearing.—Undulations of atmospheric air impress the ears, &c. &c.
And excite Sound.

Seeing.—Rays of light impress the eyes, &c. &c.
And occasion sight.

Touching.—Bodies impress the skin, &c. &c.;
And excite Touch.

The words *Smell*, *Taste*, *Sound*, *Sight*, *Touch*, signify faculties of our frame, which enable us to perceive properties of bodies.

Attention, Conception, Abstraction, Reasoning, &c. &c. &c. are intellectual operations, mysteriously connected with the functions of the brain.

Appetite, Desire, Affection, &c. &c. are principles of action, which occasion muscular motions.

VOLITION.—The act of willing and determining.

Motion.—Comprehends all those functions of the body, voluntary, involuntary, and mixed, which are accomplished by the agency of Muscle. Motion, an attribute of man and animals, may be defined:—change of the place of the whole body, of its members, of its organs, and of the parts which compose them, by means of the alternate contraction and relaxation of muscular fibres.

Station.—The place of the body in relation to that of the numerous beings with which it is surrounded.

Posture.—The place of the members of the body in relation to each other; *e. g.* Standing, Sitting, &c. &c.

Gesture.—Postures of the body, corresponding with motions of the features expressive of thought.

Progression.—Change of the place of the whole body forwards,—accomplished in man by means of *Walking* and *Running*.

Voice.—Sound, occasioned by the motions of the Larynx and of its parts on the atmospheric air, which passes through that organ during expiration.

Speech.—Voice articulated by means of the motions of the Tongue, Lips, Maxilla, &c. &c.

Manufunction.—The Hands are employed in,
 Prehending, and conveying food to the Mouth.
 Examining tangible bodies.
 The practice of mechanical arts.
 The formation of visible and tangible signs of thought.
 As weapons of offence and defence,
 &c. &c.

ASSIMILATION comprehends all those Functions which contribute to the formation of arterial blood.

By *Reception*.—Food (being prehended and conveyed) is received into the Mouth.

Mastication.—, is comminuted, and subsequently mixed with Saliva, a fluid derived by Secretion from the Salivary Glands.

Deglutition.— is conveyed from the Mouth, through the Fauces, Pharynx, and Œsophagus, into the Stomach.

Digestion.— is reduced in the Stomach to a pulpaceous homogeneous mass called Chyme. Some instead of Digestion, employ the term *Chymification*.

Chylification.—Chyle is produced and separated from the Chyme in the duodenum, jejunum, and ilium.

Fæcification.—Fæces are formed in the Cæcum.

Expulsion.—, after accumulation, change

of qualities, and residence in the Colon and Rectum, are expelled from those intestines.

By *Absorption*.—Chyle and other fluids and solids are absorbed.

Transmission.—Absorbed fluids and solids are conveyed through absorbent vessels, their glands, and the thoracic duct, into Veins:—during transmission the qualities of the absorbed substances are altered.

Respiration.—Atmospheric air is alternately inspired into, and expired from the Lungs:—owing chiefly to corresponding alternate dilatation and contraction of the cavities of the Thorax.

Sanguification.—Venal blood, mixed with chyle, &c. while circulating through the Lungs, undergoes that change which fits it for circulating through the Arteries, and for its purposes in the economy.

Circulation.—Blood is propelled from the Heart through Arteries to Organs, and returned from Organs through Veins to the Heart.—In man and some animals the circle is double; the apparatus is also double.

APPROPRIATION—Comprehends those Functions which apply blood to its purposes in the economy.

Secretion.—The separation and determination of the character of the fluids and solids, produced from the materials of the blood by the

action of Arteries and of the Vena Portarum Hepatis.

This function is subservient to Assimilation, by the production of saliva, gastric juice, &c. &c.

to Nutrition, *i. e.* comprehending the maintenance, growth, and reproduction of the organic and inorganic solids.

to Excretion, by the separation of fluids to be expelled from the system; *e. g.* Urine, &c. &c.

Calorification.—The accumulation, extrication, and diffusion of caloric, by which temperature is maintained.

GENERATION.—Comprehends those functions which contribute to the formation and production of a being similar in sex, &c. to one of its parents.

Coition.—

Impregnation.—Influence of Semen on Ova.

Conception.—The ovum is rendered prolific, and passes from the Ovarium, through the fallopian tube, into the Uterus.

Gestation.—That function of the Uterus during the evolution of the Fœtus.

Parturition.—That function of the Uterus, &c. which expel the Fœtus.

LACTATION.—Secretion of milk by the Mammæ.

DISTRIBUTION OF ORGANS.

TABLE III.

In this Table no other idea of the situation of Organs is attempted to be suggested, than that of their place in relation to the divisions of the Body.

HEAD	{	SCULL	Brain.	
		FACE	Eyes—Ears—Nose.	Nares.
			Mouth, Tongue, &c.	
NECK			Fauces.	
			Pharynx	Larynx.
				Trachea.
				Bronchi.
				Lungs.
				Heart.
			Diaphragm	
			Stomach	Liver—Gall-Bladder.
			Duodenum	Pancreas.
			Jejunum	Spleen.
			Ilium	
			Cæcum	Kidneys, &c.
			Colon	
			Rectum	Urinary Bladder.
				Organs of Generation.
			Anus.	
EXTREMITIES				

HEAD		SCULL		1 Frontal. 2 Parietal. 2 Temporal. 1 Occipital. 1 Ethmoid. 1 Sphenoid. 2 Nasal. 2 Malar. 2 Maxillary Sup. 2 Lachrymal. 2 Palate. 2 Spongy or Turbinated. 1 Vomer. 1 Maxillary Inf.	
NECK		FACE		7 Cervical Vertebres. 12 Dorsal do. 24 Ribs. 5 Lumbar do.	
TRUNK		THORAX ABDOMEN PELVIS		1 Sacrum 2 Innom. 1 Coccyx.	
EXTREMITIES		UPPER LOWER		Ilium. Pubis. Ischium.	
		SHOULDER ARM FORE ARM HAND		Clavicle, 2 Scapula. Humerus. Radius, 2 Ulna. Scaphoid, 2 Luna, 2 Cuneiform, 2 Pisiform. Trapezium, 2 Trapezoid, 2 Magnum, 2 Uuciform.	
		THUMB FINGERS TARSUS METATARSUS TOES		Bones. Ditto. Ditto, termed Phalanges, in each Finger. Femur. Tibia, 2 Patella, 2 Fibula. Calcis, 2 Astragulus, 2 Navicular. Cuboid, 3 Cuneiform. Great Toe, 2 Bones,—Small Toes, 3 Bones each.	

The Bones of the Ears, and of the Tongue; the Teeth, and the sesamoid bones; though generally enumerated with, are not properly of the Skeleton.

The bones, deprived of all soft parts, collected, arranged, and connected by means of substances, *e. g.* cork, wire, leather, &c. &c. constitute the artificial skeleton.—The Student must be careful to avoid incorrect notions, too often formed from the study of the artificial skeleton.

Articulations or Joints intended for the various motions of posture and progression,

consist of	}	Extremities of Bones.
		Cartilages.
		Ligaments.
		Synovial Apparatus.

The Bones, deprived by dissection of soft parts, but allowed to remain connected by Ligaments, constitute the Natural Skeleton.—The Student's knowledge of the artificial, corrected by that of the natural skeleton, must be applied to the bones of the entire Body.

Enumeration of those Bones which are connected with each other, and form Articulations or Joints.

Maxilla inferior . . .	} connected with {	Temporal Bones.
Occipital		1st Cervical Vertebre.
1st Cervical Vertebre		2nd Cervical Vertebre.
Vertebres		Vertebres. (a)
Dorsal Vertebres . .		Ribs.
Six Ribs		Sternum.
Clavicle		Sternum.
Clavicle		Scapula.
Scapula		Humerus.

(a) These Bones have joints, and connexion without joints.

Humerus	connected with	{ Radius.
Radius		{ Ulna.
Radius		Ulna.
Ulna		Carpal Bones.
Carpal		Carpal.
Carpal		Metacarpal.
Carpal		1st of Thumb.
Metacarpal		1st of Fingers.
1st, of Fingers		2nd of ditto.
2nd, of ditto		3rd of ditto.
Innominat		Femur.
Femur		{ Patella.
Tibia		{ Tibia.
Tibia		Fibula.
Fibula		Tarsal.
Tarsal		Tarsal.
Tarsal		Metatarsal.
Metatarsal		Toes.

Toes as fingers (b).

Enumeration of Bones which are connected with each other, but do not form Articulations.

Scull	connected with	{ Scull.
Scull		{ Face. (c)
Face		{ Face.
1st Rib		{ Sternum.
Innominat		{ Innominat.
Innominat		{ Sacrum.
Sacrum		{ Coccyx. (d)

(b) Great Toe two Bones.

(c) Excepting Maxilla Inferior.

(d) These have joints.

CONNEXION OF BONES.

Bones are connected by means of Cartilage—Li-
gament—Membrane.—

Some connexions, *e. g.* the Joints or Articulations allow of motion.

Other connexions do not allow of Motion.

Anatomists have attempted to arrange all the several instances of connexion and of motion in the following manner, and have employed certain terms to distinguish them.

Symphysis, connexion by an intermediate substance.

- 1°. Synchondrosis, by cartilage, *e g.* Bones of the Pelvis.
- 2°. Syndesmosis, — ligament, — Joints in general.
- 3°. ————— — Membrane, — The kinds of Synarthrosis.

Synarthrosis, connexion without Motion.

1°. Sutura . . { Bones of Scull with each other.
 { ————— Face with Scull.
 { ————— Face with each other.

2°. Gomphosis . . Teeth with Alveoli.

3°. Schindelysis . { Sphenoid with Vomer.
 { Vomer with Sup. Maxill. bones.

Diarthrosis, connexion with Motion

1°. Enarthrosis, . . . A Head received into a Cavity.

e. g. { — Femur with Innom.
— Humerus with Scapula,
 &c.

2°. Arthrodia' . . . Plane Surfaces, or nearly so.

e. g. { — Clavicle with Scapula.
— Some of the carpal and of the tarsal
 bones.

3°. Ginglymus Projections and cavities mutu-
ally adapted.

1°. Angular . { Joints of Maxill. Inf.
e. g. { ———— Elbow.
 { ———— Knee.

2°. Lateral . { First with Second Cervical
e. g. { ———— Vertebre,
 { ———— &c.

3°. Compound { Vertebres with each other.
e. g. { ———— Ribs.

3 *Sutures of the Skull.* 1 Coronal. 1 Sagittal. 2 Squamous. 1 Lambdoid.
5 *Sutures of the Skull and Face.* 1 Transverse. 2 Zygomatic. 1 Sphenoid.
1 Ethmoid.
15 *Sutures of the Face.* 1 Anterior Nasal. 2 Lateral Nasal.
2 External Orbital. 2 Internal Orbital.
2 Lacrymial. 1 Mystachial.
1 Longitudinal Palate. 1 Transverse Palate.
2 Palato Maxillary. 1 Spinous. 2 of the inferior
turbinate bones.

Moveable articulations consist of Extremities of Bones—Cartilages—Ligaments—Synovial Apparatus.

The extremities of bones are covered with cartilage, and in figure adapted to the direction and extent of motion.

In some joints there are inter-articular cartilages. The ligaments of a joint are in general of three kinds; capsular ligament; additional fibres closely connected with it; bands loosely connected with it passing in different directions.

1°. The capsular ligament is membranous, a bag without opening for containing the Synovia.

2°. The additional fibres vary in number according to the degree of strength required to provide for the security of the joint.

3°. The third kind of ligament determines the extent of motions in particular directions, *e. g.* the lateral ligaments.

In some joints additional security is obtained by means of inter-articular ligaments.

The Synovia is a fluid which lubricates the surfaces of bones rubbing against each other. It is derived from “masses of fat” covered by capsular ligament, projecting into the joint, and so placed as to be liable to pressure during the motions of the

joints. By this contrivance the fluid is produced in greatest quantity when most wanted.—The Synovia is derived not from glands within the fat, but from fimbriæ which hang loose into the cavity of the joint.

Sacs, called *Bursæ Mucosæ*, are placed in different parts of the Body. Their use is to lessen the friction of hard parts, as of tendons in their sheaths, or where they pass over each other, or over bones, &c.

TABLE V.—MUSCLES OF THE SKELETON.

The method here adopted prevents the necessity of using the terms Origin, Insertion, or any other which might convey erroneous notions. The Student ought to observe, that not only the extremities of Muscles are attached to Bones, but also their surfaces, by means of Cellular Membrane, &c. to each other.

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BONES.	MUSCLES.	BONES.	
SCULL	Temporalis		
SCULL— <i>Face</i>	{ Pterygoideus Externus	} Maxilla Inferior.	
<i>Face</i>	Internus		
	Masseter		
SCULL	{ Splenius	} Spine.	
	Complexus		
	Trachelo-Mastoideus		
	Rectus Capitis anterior Major		
	Minor		
	lateralis		
	posticus Major		
	Minor		
	Obliquus capitis superior		
SCULL	Sterno cleido-mastoideus	Sternum—Clavicle.	
SCULL— <i>Spine</i>	Trapezius	Clavicle—Scapula.	

BONES.	MUSCLES.	BONES.
<i>Spine—Rib</i>	<i>Quadratus Lumborum</i>	<i>Spine—Ilium.</i>
<i>Spine—Ribs</i>	<i>Intercostales</i>	<i>Ribs—Sternum.</i>
<i>Ribs</i>	<i>Sterno-costalis</i>	<i>Sternum.</i>
<i>Ribs</i>	{ <i>Subclavius</i>	<i>Clavicle.</i>
	{ <i>Serratus major anticus</i>	{ <i>Scapula.</i>
	{ ——— minor anticus	
<i>Sternum—Ribs</i>	<i>Diaphragm</i>	<i>Spine.</i>
<i>SPINE—Sternum—Ribs</i>	{ <i>Obliquus descendens externus abdominis</i>	{ <i>Ilium—Pubis.</i>
	{ ——— ascendens internus abdominis	
	{ <i>Transversalis</i>	{ <i>Pubis.</i>
	{ <i>Rectus</i>	{ <i>Pubis.</i>
	{ <i>Pyramidalis</i>	
<i>Linea alba</i>		
<i>SPINE—Ribs—Ilium</i>	<i>Latissimus Dorsi</i>	{ <i>Humerus.</i>
<i>RIBS—Sternum—Clavicle</i>	<i>Pectoralis</i>	
<i>SPINE—Ilium</i>	<i>Iliacus-Internus</i>	
	{ <i>Gluteus Maximus</i>	{ <i>Femur.</i>
	{ ——— Medius	
	{ ——— Minimus	
<i>Ilium</i>		
<i>Ilium</i>	{ <i>Tensor Vaginæ Femoris</i>	<i>Aponeurosis,</i>
	{ <i>Sartorius</i>	<i>Tibia.</i>
	{ <i>Rectus</i>	<i>Patella.</i>

BONES.	MUSCLES.	BONES.
<i>Pubis</i>	{ Pectinalis	{ Femur.
	{ Triceps	{
	{ Gracilis	{ Tibia.
<i>Ischium</i>	{ Semi-membranosus	{
	{ ---tendinosus	{
	{ Quadratus femoris.	{
<i>Ischium</i>	{ Gemini	{ Femur.
	{ Obturator Externus	{
	{ --- Internus	{
<i>Ischium—Femur</i>	{ Biceps	{ Fibula.
	{ Cruralis	{
	{ Vastus Externus	{ Patella.
	{ --- Internus	{
<i>Femur</i>	{ Popliteus	{ Tibia.
	{ Gastrocnemius Externus	{
	{ Plantaris	{ Os Calcis.
	{ Gastrocnemius Internus	{
	{ Tibialis Anticus	{ Os Cuneiform. intern.
	{ Extensor propius pollicis pedis	{ Oss. pollicis.
	{ --- longus digitorum pedis	{ Oss. digitorum.
<i>Tibia—Fibula</i>	{ Nonus Vesalii, vel peroneus tertius	{ Os. Metatars. min. digit.
	{ Tibialis Posticus	{ Os. Naviculare et Metat.
	{ Flexor longus digitorum	{ Oss. digitorum.
	{ --- pollicis	{ Os. pollicis.

BONES.	MUSCLES.	BONES.
<i>Fibula</i>	{ Peroneus longus	Os. Cuneiform. intern.
	----- brevis	Os. Metatars. min. do.
TARSUS— <i>Metatarsus</i>	{ Flexor brevis pollicis	} Oss. pollicis. et digitor.
	Abductor pollicis	
	Adductor pollicis	
	Extensor brevis digitorum	
	Flexor brevis digitorum	
	----- accessorius digitorum	
	Lumbricales	
<i>Tendons of Flexor longus.</i>	Abductor minimi digiti	
	Flexor brevis	
<i>Metatarsus</i>	{ Transversalis pedis	Metatars.
	Interossei	Oss. digitorum.
CLAVICLE— <i>Scapula</i>	Deltoides	} Humerus.
	Supra Spinatus	
	Infra Spinatus	
	Teres Minor	
	----- Major	
	Subscapularis	
<i>Scapula</i>	Coraco-Brachialis	

BONES.	MUSCLES.	BONES.
<i>Scapula—Humerus</i> .	{ Biceps flexor cubiti	Radius.
	{ Triceps extensor cubiti	} Ulna.
<i>Humerus</i> .	{ Brachialis internus	
	{ Anconeus	
	{ Flexor carpi radialis	Os. Metacarp. indicis.
	— ulnaris	Os. pisiforme.
	Palmaris longus	Ligament.
	Pronator Radii teres	Radius.
	Flexor digitorum sublimis	Oss. digitor.
	— profundus	--- do.
	— longus pollicis	Os pollicis.
	Supinator Radii longus	} Radius.
	— brevis	
<i>Humerus</i>	Pronator Radii quadratus	
<i>Radius—Ulna</i>	Extensor carpi radialis longior	Os. Metacarp. indicis.
	— brevior	— Med. digit.
	— Ulnaris	— Minim. digit.
	— digitorum Communis	Oss. digitorum.
	Indicator	Oss. digit. indic.
	Extensor primi internodii pollicis	— 1. }
	— secundi	Oss. pollic. 2. }
	— tertii	— 3. }

BONES.	MUSCLES.	BONES.
	<div><div>Abductor pollicis</div><div>Opponens pollicis</div><div>Flexor brevis pollicis</div><div>Adductor pollicis</div><div>Abductor indicis</div><div>Abductor minimi digiti</div><div>Adductor</div><div>Flexor parvus</div></div> <div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>Oss. Pollicis.</div><div>Oss. digitorum.</div></div>	
CARPUS—Metacarpus		
	<div><div>Fascia palmaris</div><div>Palmaris brevis</div><div>Lumbricales</div><div>Interossei</div></div> <div><div>Skin, Os. pisiforme.</div><div>Oss. digitorum.</div></div>	
TENDONS of Flexor profund. Metacarpus		

BONES, &c.

MUSCLES.

ORGANS, &c.

OF THE LIPS.

<i>Superior Maxillary</i> . . .	{ Levator labii superioris, alæque nasi	Upper Lip—Nose.
	{ Depressor labii superioris . . .	do.
<i>Inferior Maxillary</i> . . .	Levator anguli oris . . .	
<i>Os. Mala</i> . . .	Depressor anguli oris . . .	Angle of the Mouth.
	Zygomaticus . . .	
<i>Inferior Maxillary</i> . . .	{ Depressor labii inferioris . . .	
	{ Levator labii inferioris . . .	Under Lip.
<i>Lip</i> . . .	Orbicularis oris . . .	Lip.
<i>Inferior Maxillary</i> . . .	Buccinator . . .	Cheek—Lips.
<i>Superior Maxillary</i> . . .		
<i>Sphenoid</i> . . .		

OF THE NOSE.

<i>Nasal</i> . . .	Compressor naris . . .	Ala Nasi.
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OF THE EAR.

	<i>External.</i>	
<i>Temporal</i> . . .	{ Retrahentes Aurem . . .	Cartilage of the Ear.
<i>Tendon of occip. frontalis</i> . . .		
<i>Temporal</i> . . .		

BONES, &c.		MUSCLES.		ORGANS, &c.	
<i>Os. Tempor.</i>	. . .	Digastricus	} <i>Os hyoides.</i>	— do. and Tongue.
<i>Maxilla Inferior</i>	. . .	Mylo-hyoideus		
	. . .	Genio-hyoideus		
	. . .	Genio-hyo-glossus		
<i>Os. hyoid.</i>	. . .	Hyo-Glossus	} Tongue.	Os. hyoides.
<i>Tongue</i>	. . .	Lingualis		
	. . .	Stylo-Glossus		
<i>Os. Tempor.</i>	. . .	—Hyoideus		
	. . .	—Pharyngeus	} Pharynx.	Velum palati.
<i>Os. Sphenoid. &c.</i>	. . .	Circumflexus Palati		
<i>Os. Tempor. &c.</i>	. . .	Levator		
<i>Anterior arch of the Palate</i>	. . .	Constrictor Isthmi Faucium		
<i>Cartil. thyroid.</i>	. . .	Palato-pharyngeus	} Pharynx	— do.
<i>Oss. palati</i>	. . .	Azygos Uvulæ		
The Larynx consists of the following Cartilages, viz.			. . .		
<i>Cartil. thy. et cric.</i>	. . .	Constrictor Pharyngis Inferior	} 1 Thyroid—1 Cricoid—	2 Arytenoid—1 Epiglottis.
<i>Os. hyoid. &c.</i>	. . .	— Medius		
<i>Oss. Occip. Sphenoid. et Max.</i>	. . .	— Superior		
<i>illa</i>		

BONES, &c.		MUSCLES.		ORGANS, &c.	
		OF THE LARYNX.			
<i>Larynx</i>	{	Crico-arytenoideus posticus			
		----- lateralis			
		Thyro-arytenoideus			} <i>Larynx</i> ,
		Arytenoideus obliquus			
		----- transversus			
		Thyro-Epiglottideus			
		Aryteno---do.---			
OF THE MALE ORGANS.					
<i>Muscul. obliq. intern.</i>	:	Cremaster			Tunica vaginalis testis.
<i>Os Ischium</i>	:	Erector Penis			Membrana Corp. Cavern. penis,
<i>Sphincter ani--Urethra--Penis</i>		Accelerator Urinæ			fellow muscle.
		Muscle of Urethra described by Wilson			do.
<i>Os Ischium</i>	:	Transversus Perinei			Acceler. urinæ et transv. perinei.
<i>Os Coccygis.</i>	:	Sphincter Ani			do.
<i>Oss. pubis et ischium.</i>	:	Levator			Os coccygis--accelerat. urinæ et
					sphinct. ani.
OF THE FEMALE ORGANS.					
<i>Os. Ischium</i>	:	Erector Clitoridis			Clitoris.
<i>Sphincter ani--Vagina</i>	:	Sphincter Vaginæ			Clitoris.
<i>as in the male</i>	:	Transversus Perinei			Sphinct. ani--Vagina, &c.
<i>do.</i>	:	Sphincter Ani			Sphinct Vaginæ, &c.
<i>do.</i>	:	Levator			Perineum--Sphinct. ani--Vagina
					--rectum.

The Muscles of the Skeleton are subservient to the fixedness of the Bones in Station, and to their motions in Progression, &c.

The Muscles of Organs are subservient to their Functions, *e. g.* those of the Larynx, Tongue, &c. &c.

It appears useful to arrange them in two tables; notwithstanding the separation of contiguous muscles. Various methods of arrangement have been adopted, some according to their situation, others according to their use: every method should be employed, each communicating valuable information.—All I have attempted, is to name the parts to which the extremities of each muscle are attached: the Student should endeavour to acquire correct notions of the position and relative situation of muscles; he will then be prepared to surmount those obstacles which would otherwise greatly retard, if not prevent his familiarity with the large trunks of Arteries, &c. —I say familiarity, because in the surgical treatment of wounded Arteries and of Aneurism, such knowledge is indispensable. The Function of a Muscle consists of alternate contraction and extension of its fibres.—The Use of a Muscle is to move parts with which it is connected, to propel fluids, &c. &c. In studying the motions of the human body, attention should be paid to the various mechanical contrivances observed in the Skeleton, &c. which regulate and determine the effect of the contraction of Muscles.

TABLE VII.—OF ARTERIES.—Two Arteries proceed from the Ventricles of the Heart. One, called the Pulmonary Artery, proceeds from the right ventricle; another, called the Aorta, proceeds from the left ventricle. The Pulmonary Artery conveys to the Lungs blood, which is returned from those organs by the Pulmonary Veins to the left auricle of the Heart; it thence passes into the left ventricle, and from that cavity into the Aorta, to be distributed by means of innumerable branches from that vessel to every Organ of the Body.—The Aorta divides on the fourth lumbar vertebre into two Trunks. Anatomists name the parts of the Aorta and the Trunks proceeding from it as follows:—

AORTA.	ASCENDING	Coronaries of the Heart. Innominate } Right Subclavian. } Right Carotid.	COELIAC	Gastrica Superior. Hepatica. Splénica.
	ARCH	Left Carotid. Left Subclavian.		
	DESCENDING			
	THORACIC	Intercostal, (10) pair. Bronchial, } several. Esophageal, } Diaphragmatic. Cœliac. Mesenteric Superior. Capsular. Renal. Spermatic. Mesenteric Inferior. Lumbar, (5 pair). Sacro-median.	MESENTERIC SUPERIOR	Convex Side { Pancreaticæ. Duodenales. Branches to Jejunum. Ilium. Concave Side { Ilio-colica. Colica dextra. Media.
	ABDOMINAL		MESENTERIC INFERIOR	Ramus Ascendens. Colica Sinistra. Hæmorrhoidalis Interna.
divides into Common Iliacs.				
CAROTID				

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SUBCLAVIAN.	AXILLARY.	HUMERAL.
Mammary internal. Vertebral. Intercostal superior. Thyroidal inferior. Cervical anterior. _____ posterior. Superior dorsal of the Scapula.	Mammary external. Internal of the Scapula. Inferior dorsal ditto. Circumflex anterior. _____ posterior.	Profunda superior. _____ inferior. Anastamotic magn. Medullary.
		RADIAL { Superficial: volæ. Pollicis magna. Radialis indicis. Palmaris profunda. Recurrent. Interosseal posterior. Interosseal anterior. Arcus sublimis superfi
		ULNAR {
		RECURRENT. { Malleoli interna. Malleoli externa. Tarsea. Anastamotic profund. Dorsalis pedis.
		FIBULA. { Nutritia Tibiæ. Plantaris interna. Plantaris externa.
EXTERNAL ILIAC.	FEMORAL.	POPLITEAL.
Epigastric. Circumflex of the Ilium.	Pudical external. Femoris profunda.	Articulares.
INTERNAL ILIAC.	POSTERIOR BRANCHES.	ANTERIOR BRANCHES.
Ilio-lumbaris. Sacrae Laterales. Glutea.		Obturatoria. Umbilicalis. Vesicalis Inna. Uterina. Hemorroidalis media. Pudica Communis. Sciatica.

The Table of the Arteries of the Aortic System is an enumeration only of principal trunks.

This little book not being intended to supply the place of elementary works already published, much is omitted which would otherwise be requisite. With respect to arteries, the most minute and accurate description unaccompanied with plates, would convey little practical knowledge.

The Arteries must be dissected with great attention and unceasing perseverance 'till the student has obtained an accurate knowledge of the situation of those Trunks to which ligature is applicable, either for restraining hemorrhage, or for the cure of Aneurism. "The Anatomist, who knows that the principal artery of the thigh is the femoral—that, continued under the name of popliteal, it passes behind the knee in its way to the leg—that, in its course, it supplies with branches different parts of the limb, even though he knew perfectly the name, the number of these branches, the varieties to which they are subject, the parts to which they are distributed, would nevertheless possess a knowledge of that branch of the System, almost useless in the treatment of the diseases with which it may be affected. The situation of the artery, its direction, the parts which surround it, its precise relations to each of them, its superficial or deep seated course, &c. are the only circumstances from which he can derive any advantage."

I may be allowed to add, that the Student must not be satisfied even with handling parts dissected by others, he must (if he wish to become a skilful Sur-

geon) be a practical Anatomist.—It is much to be regretted that names given to arteries and to other parts of the body should want the concurrence of all the Teachers of Anatomy.—In studying the Arteries, the usual distribution of the large trunks should be first attended to, after which the learner ought to acquire a knowledge of the varieties to which they are subject.—The branches which concern the Physiologist rather than the Surgeon, are worthy of being well known, in order to explain numerous phenomena and functions of the human body.

The Veins which correspond with the Aorta and its branches constitute two large trunks, the Venæ Cavæ, called superior and inferior, in relation to the Diaphragm; they pour their blood into the Right Auricle of the Heart.—In this cavity the returning blood is mingled with Chyle and with materials absorbed from the solids and fluids. The Veins run in two sets:—one subcutaneous, the other deep seated and accompanying trunks of Arteries. Students having acquired a knowledge of the Arteries, will have no difficulty in learning the names and course of the venæ concomites.

The subcutaneous veins are subject to great variety in different bodies. The Student is chiefly interested with those in which Phlebotomy may be performed.

If he refer to the character of Vein, he will find it there said, that veins have not muscular fibres. I could wish to qualify this assertion by stating that some anatomists admit their muscularity. The phenomena of the circulation in those vessels, seem to me to discredit such opinion; moreover, the existence of numerous valves appears to be a compensation for that form of organization.

The Table of the Veins exhibits only the principal branches and trunks, so arranged as to suggest some notion of the formation of the great trunks, and of their termination in the right auricle of the heart.

The most curious part of the venal system is that of the formation and distribution of the Vena Portarum;—a large trunk formed by veins returning the blood from the Stomach, Intestines, Pancreas,

and Spleen, which instead of immediately joining the inferior cava, enters the liver, ramifies in that viscus, and performs a function of arteries, viz. Secretion. The blood is appropriated only to the secretion of bile;—the nutrition of the liver being carried on by means of the Hepatic Artery. The bile being produced, the remaining blood is transmitted to the inferior Cava.

The Sinuses of the veins of the brain, are intended, and admirably adapted to guard against obstructions to the circulation, occasioning pressure on that important organ.

THE ABSORBENT VESSELS.

THE discovery of absorbing vessels, an important addition to anatomy, led to improvements in Physiology and Pathology.—Anatomists have found these vessels in most organs of the body, and admit their existence in all of them, although they have not yet been, and perhaps may not be, demonstrated. Physiologists do not sanction the opinion formerly entertained, viz. that, in some parts, veins perform the office of absorbing vessels.—Veins only return from organs that blood which is not employed by arteries for the several purposes of secretion.

The Absorbent System comprises the Lacteals, Lymphatics, and those highly organized bodies connected with them, called Glands.

Lacteals do not differ from Lymphatics either in structure or function, but in the fluid which they occasionally imbibe and transmit. Chyle, absorbed from the Duodenum, Jejunum, and Ilium, is conveyed by a trunk of these vessels, the Thoracic Duct, into the left Subclavian Vein; this fluid, in its course to that duct, passes through several of the glands, in which its properties are altered.

The Absorbents, of all other organs, are called Lymphatics.

Lacteals and Lymphatics originate with open extremities from the membranous surfaces of the cavities of the body and of its organs; they, like veins, generally run in two sets—one superficial and very numerous, the other accompanying the arteries, and at least double their number. Most of the Lymphatics, and all the Lacteals, terminate in the Thoracic Duct. Those Lymphatics, which do not terminate in this duct, unite to form a trunk, which pours its contents into the right Subclavian Vein. The common and ultimate termination of this important system is in the veins. Several trunks of superficial absorbents accompany superficial veins; others run at a distance from them: they communicate with each other, and with those which accompany arteries. Glands are not peculiar to Lacteals; they are found connected with Lymphatics. The valves of absorbent vessels are extremely numerous.

The Absorbents imbibe new materials from the intestines and lungs. They also imbibe from the secreted fluids and solids. In general, the function

and use of these agents are opposite and contrary to those of arteries. Modern experiments shew, that those of the skin do not absorb new materials unless friction be employed.

THE NERVES.

THE Brain, Spinal Medulla, and Nerves, constitute a system of organs connected with those of Sense and the Muscles. The Nerves may be divided into two sets—those which proceed from the Brain, and those which proceed from the Spinal Medulla. There are nine pair of Cerebral Nerves, and thirty pair of Spinal Nerves, from which all the branches and filaments are traceable. Nerves, from different sources, unite with each other by their extremities, and by means of Plexus and Ganglia. The great Sympathetic Nerves are connected with almost all those which are described as originating from the Brain and Spinal Medulla.

Sensation, Perception, and Volition, operations of mind, are dependent on the Nervous System. The voluntary motions of human and of animal bodies, performed by Muscles, are excited by means of impressions on the Nerves, transmitted from organs of sense to Brain, and from Brain to Muscles. Anatomists and Physiologists have, of late years, by experiments thrown much light on the phenomena and laws of the Nervous System.

CEREBRAL NERVES.

1st pair—Olfactorii	To the organ of Smell.
2nd ditto—Optici	—Sight.
3rd ditto—Motores Oculorum	Muscles in the Orbit.
4th ditto—Pathetici	to superior oblique ditto.
5th ditto—Trigemini	{ 1st branch Ophthalmic
(to various parts)	{ Supra-Orbital. Nasalis. Lachrymalis.
	{ 2nd branch Superior Maxillary
	{ Spleno-palatine,—filaments connected with Great Sympathetic. Palato-maxillary.
	{ 3rd branch Inferior Maxillary.
	{ Deep temporal. Gustatorius. Posterior Maxillary.
6th ditto—Abducetes,—to abductor muscle of the eyeball	{ Internal Maxillary—Anterior Maxillary.
7th ditto { Auditorius, vel	{ Internal Maxillary—Anterior Maxillary.
{ Portio-Mollis—to organ of hearing.	
{ Communicans faciei vel	{ Chorda tympani,
{ Portio Dura.	{ occipital, digastric, } pes anserinus—
	{ &c.
8th ditto { Glosso-Pharyngeus—	{ digastric.
	{ cardiac.
	{ pharyngeal.
	{ tonsillaris.
	{ Pars Vaga.
9th ditto—Lingualis—descendens Noni.	

Nervi Accessorii ad Par Octavum. Originate by small filaments from Cervical Nerves, enter the Scull, go out with 8th pair, perforate the Sternocleido-mastoideus Muscles, give a branch which is connected with the Pharyngeal, a branch which is connected with Par Vagum, branches to Sternocleido-mastoid Muscles: are connected with Cervical Nerves, and terminate in Trapezius Muscle.

Pars Vaga. Gangliform enlargement. It passes along the neck “at the outer and back part of the common Carotid Artery.” *Branches of this Nerve*, 1st, Pharyngeus;—2d, Laryngeus Superior;—3d, Cardiac;—“enters the Thorax between Subclavian Vein and Artery; and, after giving off the Recurrent Nerve, passes behind the root of the Lungs.”

Recurrent Nerve. Reflected upwards on the right side, behind Subclavian Artery; on the left side, behind arch of the Aorta. It is connected, near its origin, by one or two branches, with Ganglia of the Great Sympathetic Nerve, and sends branches to join those of the 8th pair, in forming anterior pulmonary Plexus. Near Subclavian Artery, it is connected, by filaments, with the superficial and deep Cardiac Branches of Great Sympathetic Nerve. It gives filaments to the Trachea, to the Œsophagus, and Pharynx, &c. A branch connected with one, from the internal Laryngeal Nerve. Fibrillæ to Arytenoid Muscles, and to internal membrane of the Larynx. The Recurrent Nerves are considered the principal ones of the Organ of the Voice. The Pars

Vaga now gives off filaments, which unite with others from both Recurrent Nerves. They are connected with the Cardiac Branch of the Sympathetic, and then passing to the anterior part of the Bronchi, constitute the anterior Pulmonary Plexus. From near the Recurrent, the small Œsophageal Plexus. Behind the root of the Lungs, the Posterior Pulmonary Plexus. After these, the Great Œsophageal Plexus, which surrounds the Œsophagus, sends filaments into its substance, and is joined by branches from Pars Vaga of the opposite side; after which, it goes through the Diaphragm. The left Pars Vaga descends from the Great Œsophageal Plexus, passes along the Stomach, detaches filaments to the left Hepatic Plexus, and divides into numerous branches distributed to the Stomach.

The Right Pars Vaga passes along the Stomach, splits into two fasciculi. One goes to the root of the Hepatic Plexus, and to the Cæliac Ganglion. The other is distributed by numerous branches upon the Stomach.

The Great Sympathetic Nerve. (So called from its numerous connexions with other nerves) is by some described as originally formed by the filaments from 5th and 6th pairs; by others, as sending these filaments to those nerves; be that as it may, by such filaments the connexion is established. These filaments form a Plexus (which surrounds the internal Carotid Artery) whence the trunk, which, emerging with the artery from

the Scull, is connected with 8th and 9th nerves. Having separated from these, it forms the Ganglion Cervicale Superius. From this the nerve passes along the neck behind, and to the inner side of the Pars Vaga; at the lower part of the neck it forms the Ganglion Cervicale Medius, from which, among other branches, one goes to the Ganglion Cervicale Inferius. During the course of the Sympathetic along the neck it is connected with other nerves, viz. the Sub-occipital; the Glosso-pharyngeus; the Laryngeus internus; &c. *Vide infra*. Filaments accompany the branches of the external Carotid Artery.

Spinal Nerves. Thirty pair are commonly enumerated, viz. 1 Sub-occipital;—7 Cervical;—12 Dorsal;—5 Lumbar;—5 Sacral.

Emerging from between the Vertebres, each pair sends branches backwards to the Muscles; others, forwards, to be connected with the Great Sympathetic Nerve, the trunk going to be distributed.

CERVICAL NERVES.—*Sub-occipital.*—Are connected with 9th pair; with Ganglion Cervicale Superius, and with 1st Cervical Nerve; and are distributed to Muscles.—*1st Cervical.*—Connected with Nervus Accessorius, the 9th pair, with the Sympathetic, with 2d Cervical, and forms the Occipital Nerve, which is connected with the 1st branch of the 5th, and with the Portio Dura of the 7th.—*2d Cervical.*—Connected with Sympathetic Nerves, Accessorius, Descendens

Noni, and 3d Cervical.—*A Branch to the Diaphragmatic Nerve.*—The middle and inferior Cutaneous Nerves of the Neck. The great Posterior Auricular Nerve. These are connected with the Portio Dura of the 7th pair.

To prevent unnecessary repetition, and to make this sketch as concise as possible, let it be here understood, that all the Spinal Nerves are connected with each other, and with the Great Sympathetic. I shall now, in proceeding with the Spinal Nerves, mention only some of the principal branches.

3d Cervical.—A branch of, is the principal root of the Diaphragmatic Nerve.—*4th Cervical.*—Branches to the Diaphragmatic Nerve.

The Diaphragmatic, or Phrenic Nerve.—These Nerves pass along the Scalenus Anticus Muscles, enter the Thorax between the Subclavian Artery, and Vein, and pass over the root of the Lungs along the Pericardium or membranous Bag of the Heart, with which it is closely connected, to the Diaphragm.

The Cardiac Nerves.—The origin of the Nerves, distributed to the heart must, from their intricacy and peculiar importance, be now only mentioned. They are derived from the Great Sympathetic and Pars Vaga.

The 4th, 5th, 6th, and 7th Cervical, with the 1st Dorsal, form the

Axillary Plexus, whence proceed to the upper extremity the following Nerves, viz. the Scapularis, Articularis, Cutaneus, Musculo-

Cutaneus, Muscularis, Radialis, and Ulnaris.

The intercosto-humeral nerves from the dorsal are also sent to the upper extremity.

The Dorsal Nerves.—These nerves running between the Ribs are called Intercostal. They are connected with each other and with the great sympathetic. They give branches to muscles in their neighbourhood.

The 5th, 6th, 7th, 8th, and 9th dorsal ganglia give branches which unite to form the Nervus Splanchnicus, which perforates the diaphragm, and is distributed to the abdominal viscera.

The Great Sympathetic Nerve in the Thorax. This Nerve having detached the principal Cardiacs, consists of two portions, of which one passes on each side of the subclavian artery. They unite into a trunk, which passes over the heads of the ribs. At the head of each rib it forms a Ganglion, whose branches unite with the Dorsal.

Pars Vaga and Nervi Splanchnici. The abdominal Viscera are supplied by branches from these Nerves:—as follows,—The Semilunar Ganglion, which is formed by many Cæliac Ganglia, receives Nervi Splanchnici and branches from Pars Vaga. From this source a plexus surrounds and accompanies each artery, and with it is distributed to the Viscera.

Lumbar Nerves.—These Nerves are connected with each other, and with the great sympathetic.—Various branches are given off, among them the

Spermaticus externus.—The 2nd, 3rd, and 4th, Lumbar form the Obturator.—The 1st, 2nd, 3rd, and 4th, ditto, form the Crural or anterior femoral.—The 4th and 5th ditto, together with the 1st, 2nd, and 3rd, sacral, form the Sciatic, which supply the Lower Extremity.—The Obturator is dispersed among muscles of the pelvis and thigh.—The Crural detaches the cutaneus medius, antierius, and internus, and also the Nervus Saphenus.—The Sciatic detaches cutaneous Nerves, is afterwards called Popliteal, from whence proceed the Fibular and Tibial Nerves.

Sacral Nerves.—*The posterior branches* of these Nerves, are distributed to muscles on the Sacrum to the glutei, &c.—*The anterior branches* are connected with each other and with the great sympathetic.—They give branches to adjacent parts and form the trunks mentioned above.

For the connexion of the Nerves with the Brain, and with the Spinal Medulla, vide those Organs. I have preferred this very concise description of the Nerves to a Table.

For commencement of Nerves, vide Brain and Spinal Medulla.

With this enumeration of the principal nerves, I conclude the First Part of these Rudiments. It was my intention to have enlarged each section, and to have added explanatory remarks;—but, on reflection, it appears, that I could not have accomplished the former without anticipating materials

which, in their natural place, will come after the Second Part; nor the latter, without originating objections which may or may not be made. I shall therefore wave both,—and earnestly request the candid opinion and judgment of my critical readers previously to the publication of a second edition, should it be deemed worthy of acceptance.

END OF THE FIRST PART.

